February 18, 2008

Mr. Jim Marshall, P.E.
Senior Engineer
Water Quality Control Engineer
California Water Quality Control Board
Central Valley Division
11020 Sun Center Drive, #200
Rancho Cordova, CA 95870-6114

SUBJECT: Comments on Tentative Order – Waste Discharge Requirements for the City of Modesto Water Quality Control Facility – Stanislaus County - NPDES permit No. CA0079103

Thank you for the efforts of you and your staff and the considerations given with the City of Modesto's master planning timeline when issuing the Central Valley Regional Water Quality Control Board's (Regional Board) Tentative Order (TO) for *Waste Discharge Requirements for the City of Modesto Water Quality Control Facility* (WQCF, NPDES No. CA0079103). We understand that writing the TO was a complex effort given the planned improvements at the WQCF, and the City appreciates this opportunity to comment on the TO.

The City addresses several critical points in this letter. More detailed comments are included as Attachment A to this letter. Because they are of significant concern, the City would like to further discuss the following issues before adoption of the permit:

- **Order Effective Date** - If the TO is adopted at the March 13-14, 2008 Regional Board hearing, the effective date for the permit would be the 50th day following adoption. This is relevant because the City is prohibited from (secondary) river discharge after May 31st. The City traditionally has not discharged after May 1st. The Regional Board has discretion to set this effective date, especially in cases where there is significant public comment on the permit.

  The TO for the Modesto WQCF will likely receive significant public comment, including these comments submitted by the City. Therefore, the effective date of the City's NPDES Permit should be 50 days after the TO is formally adopted by the Regional Board. The City requests that the RWQCB amend several sections in the TO (Sections IV.A.1, IV.A.3.a., IV.A.3.c., and IV.A.3.d.) to revise the effective date accordingly.

- **Tertiary and Secondary Blending** - The City requests an operational provision or clarification regarding regulation of combined or separate secondary and tertiary discharge when 20:1 dilution is available between October 1st and May 31st. For example, there may be some cases during the upcoming permit period when the secondary discharge quality is of "lower" quality due to algae or ammonia concentrations, however, when blended with tertiary filtered discharge, the resulting water quality is of sufficient quality to discharge with 20:1 dilution available at discharge point "001". It is unclear whether the permit allows such operational flexibility. The City suggests the following modification to this section:

> "Unless otherwise specified, the following effluent limitations for the Seasonal Discharge, permit pursuant to Section 402 of the CWA, are **effective on the 50th day following adoption of this order ~~effective immediately~~**. The Discharger shall maintain compliance with the following effluent limitations with compliance measured at Monitoring Location EFF-001A, as described in the attached MRP (Attachment E). These limits also apply in cases whereby tertiary treated effluent is blended into the secondary treated water prior to discharge and 20:1 upstream dilution is provided between October 1 and May 31. "

- **Ammonia** - The City faces a significant challenge to comply with both the final and interim ammonia effluent limitations in the existing secondary discharge. The City is actively working to improve secondary discharge quality with the current installation of dissolved air flotation (DAF) units. A specific reopener should be added to allow consideration of a water effects ratio (WER), a revised mixing zone study that considers a diffuser, and a dynamic model for effluent limitation calculation. The City requests that the following reopener provision be add to section VI.C.1.:

  > **"h. Ammonia Site Specific Objective and Dilution.** Without specific nitrification processes in the secondary treatment train, the City will be unable to comply with the final effluent limitations when the interim effluent limitations expire. If the discharger performs a site-specific WER study, and/or the results of the mixing zone study provide dilution credit, a site specific objective can be used to revise final effluent limitation calculations. Additionally, the SIP allows for the use of dynamic modeling for effluent limitation calculation. This order may be reopened to modify final effluent limitations to consider this new information."

  The interim effluent limitation in Table 9 is a "floating" value based on the observed effluent pH. This interim effluent limitation is consistent with the final effluent limitations in the previous permit. Because of State Board rulings on previously petitioned permits, this "floating" effluent limitation approach is no longer considered appropriate for effluent limitations, and the Regional Board has used a WQBEL calculation methodology for the other interim and final effluent limitations in this permit. For consistency with the State Board ruling and other Regional Board practice, the interim effluent limitation should be a specific value and based on previous performance, specifically the arithmetic mean plus 3.3 standard deviations. On this basis, an interim performance-based limitation of 24 mg/L should be added to Table 8, and Table 9 should be omitted.

- **Nitrate and Nitrite** - Final nitrate and nitrite effluent limitations do not consider assimilative capacity nor dilution. Neither constituent has been detected above the water quality objective upstream of the WQCF discharge. Therefore, a dilution credit should be allowed. The modeling and field observations have shown that complete mixing is assured for the nearest possible potable water intake point, which is 2.5 miles downstream of the City's discharge. No justification for the denial of assimilative capacity and dilution credit in effluent limitation calculation are provided in the TO.

  If for some reason a dilution credit is not granted, the City requests interim performance-based limitations for nitrite and nitrate. Performance-based interim limits should be included in Table 8 for both nitrite (4.1 mg/L) and nitrate (14.3 mg/L) based on effluent data between November 2001 and January 2007.

There is no justification for including year-round tertiary effluent limitations for nitrate and nitrite. The proposed process includes nitrification/denitrification and is designed to remove these constituents below the water quality criteria. The nitrite and nitrate final effluent limitations in Table 7 should be omitted.

- **Carbon Tetrachloride** - There is no justification for including a year-round tertiary effluent limitation for carbon tetrachloride. This is acknowledged as a disinfection byproduct and the proposed expansion includes ultraviolet disinfection. For this same reason, there was no finding of reasonable potential for chlorodibromomethane or dichlorobromomethane in the year-round discharge. These constituents are chlorination by-products and there is no expectation that they will be present.

  Ambient data reported after the ROWD submittal demonstrates that there is assimilative capacity in the river for carbon tetrachloride. Data collected upstream from the discharge since 2005 were reported as "non-detect" at method detection limits of 0.04 µg/L and 0.06 µg/L. Tables 6 in the TO should be revised to include a dilution credit of 20:1. If final effluent limitations are not omitted from Table 7 for carbon tetrachloride, the limitation should be revised to consider dilution.

- **Aluminum** - Multiple WER studies have demonstrated that the USEPA aluminum water quality criteria (87 µg/L) is overprotective for site specific conditions in the Central Valley. Initial WER calculations performed for the City confirm the results of the complete WER study performed in Manteca. These studies indicate a minimum WER greater than 19.4. Based on these studies, the City requests that the next lowest water quality criteria be applied (Secondary MCL, 200 µg/L) as the basis for the final effluent limitations in Tables 6 and 7.

- **Salinity** – On February 14, 2008, the City received your e-mail notification that final effluent limitations for salinity would be added to the permit based on comments received from EPA Region 9, dated February 13, 2008. This new permit addition is contrary to the intent of the TMDL Basin Plan amendment that allows a compliance period of sixteen to twenty years. Region-wide compliance with the TMDL will be achieved through a massive cooperative effort, and every additional constraint such as this final effluent limitation could hinder the type of creative solution that is necessary to solve the Central Valley salinity problem. If the final effluent limitation is added to Tables 6 and 7 of the permit, the City requests that the following footnote be added:

  > "Final effluent limitations for EC are based on the salinity TMDL and Basin Plan Amendment which also includes a compliance schedule of sixteen to twenty years, and is not enforceable until that time. The TMDL recognizes that compliance with the final effluent limitation will require efforts beyond traditional treatment and control, including pollutant trading and supply water allocations. Therefore, this effluent limitation may be modified to consider new information."

Our specific detailed comments are presented in Attachment A, organized by permit section. Additionally, we are preparing compliance schedule justifications for several of the constituents identified in the TO and others that we believe should receive compliance schedules in the permit. The constituents for which we have conducted infeasibility analysis include aluminum, ammonia, electrical conductivity (EC), chlorodibromomethane, dichlorobromomethane, carbon tetrachloride, nitrate, and nitrite. This report will be submitted to you as specified in the permit, but could be submitted earlier if necessary.

Again, thank you for your consideration of our comments. In anticipation of the comments transmitted in this letter, we have a meeting scheduled with you on February 20, 2008. Please call John Rivera at (209.577.6381), if you have any questions regarding our comments prior to the scheduled meeting.

Regards,

Gary DeJesus
Deputy Director, Public Works

cc: Nick Pinhey, City of Modesto
Rich Ulm, City of Modesto
John Rivera, City of Modesto
Brian Laurenson, Larry Walker Associates

ATTACHMENT A. DETAILED COMMENTS ON TENTATIVE ORDER

COMMENTS ON FINDINGS

Findings I. – Table 4, Facility Information should list the facility contact as "Gary DeJesus, Deputy Director, Public Works, (209.577.6300)".

Findings II.A. Background. – The Background Information states that the Discharger submitted an Amendment requesting a year-round discharge of up to 10 mgd for tertiary treated wastewater. However, the permit includes up to 4.8 mgd; the discrepancy between the two may cause confusion, or imply that the request was denied. The City requested the 4.8 mgd discharge following meetings with Regional Board staff as noted in the November 8, 2006 letter from the City to Mr. James Marshall. The antidegradation analysis (June 2007) is also a basis for the ROWD amendment. The Background Information should be amended to reflect revised City request (see November 8, 2006 letter from the City to Jim Marshall). The following text is suggested:

> "On 4 April 2006, the Discharger submitted an Amendment to the Report of Waste Discharge requesting the year-round discharge of up to 10 mgd of tertiary (or equivalent) treated wastewater from the Facility to the San Joaquin River. The application was deemed complete on 21 April 2006. Subsequent communications from the City, including a November 8, 2006 letter and the June 2007 antidegradation analysis included only a 4.8 mgd total year-round tertiary discharge."

Findings II.K. – Finding K includes a sentence that states, "[t]he Regional Water Board, however, is not required to include a schedule of compliance, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit." This sentence is inconsistent with the purpose of a schedule of compliance, which is intended to allow a permittee time to meet water quality based effluent limits for new water quality standards or new interpretations of narrative water quality standards. In addition, this sentence is not necessary to describe the Regional Board's authority with regards to compliance schedules in permits. Because it creates confusion and is not necessary, we recommend that this sentence be removed from finding K.

Findings II.M. – Finding M appropriately identifies that the Order includes effluent limitations that are more stringent than federal law for BOD, TSS, turbidity and pathogens. The City supports this portion of the finding. However, the following paragraph includes permit template language that does not apply in this case. More specifically, the last sentence of the standard template language concludes that the "[o]rder's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards of for the purposes of the CWA." This sentence directly conflicts with the preceding paragraph that recognizes that the Order does contain some limits that are more restrictive then federal law. Thus, finding M must be amended to reflect the specific requirements contained in this order.

COMMENTS ON EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Section IV.A.1 – The City requests an operational provision or clarification regarding regulation of combined or separate secondary and tertiary discharge when 20:1 dilution is available between October 1 and May 31. For example, there may be some cases during the upcoming permit period when the secondary discharge quality is of "lower" quality due to algae or ammonia concentrations, however, when blended with tertiary filtered discharge, the resulting water quality is of sufficient quality to discharge with 20:1 dilution available at discharge point "001". It is unclear whether the permit allows such operational flexibility. The City suggests the following modification to this section:

> "Unless otherwise specified, the following effluent limitations for the Seasonal Discharge are **effective immediately**. The Discharger shall maintain compliance with the following effluent limitations with compliance measured at Monitoring Location EFF-001A, as described in the attached MRP (Attachment E). These limits also apply in cases whereby tertiary treated effluent is blended into the secondary treated water prior to discharge and 20:1 upstream dilution is provided between October 1 and May 31. "

Table 6. Effluent Limitations – Seasonal Discharge – The following modifications are requested to the final effluent limitation table; justification for these changes is provided in the corresponding Fact Sheet discussion:

- Aluminum (Total) – The effluent limitation should be calculated based on the Secondary MCL, applied as an annual average in the same manner as iron and manganese. Preliminary WER testing confirms that this is the most stringent water quality criteria.
- Chloride – A chloride effluent limitation is not necessary as the Salinity and Boron TMDL is intended as the means to regulate all salinity-related constituents. The average monthly effluent limitation should be 216 mg/L as shown in Table F-5, not 262 mg/L.
- Molybdenum, nitrate, and nitrite effluent limitations should all include 20:1 dilution in the effluent limitation calculation.
- Carbon tetrachloride – The effluent limitation should be recalculated to consider dilution. Ambient data collected since the ROWD are below a method detection limit that is less than the CTR water quality criteria (0.25 µg/L).

Table 7. Effluent Limitations – Year-Round Discharge – The following modifications are requested to the final effluent limitation table; justification for these changes is provided in the corresponding Fact Sheet discussion:

- Aluminum (Total) – The effluent limitation should be calculated based on the Secondary MCL, applied as an annual average in the same manner as iron and manganese. Preliminary WER testing confirms that this is the most stringent water quality criteria.
- Chloride – A chloride effluent limitation is not necessary as the Salinity and Boron TMDL is intended as the means to regulate all salinity-related constituents. The average monthly effluent limitation should be 216 mg/L as shown in Table F-5, not 262 mg/L.
- Molybdenum – Effluent limitation calculations should consider 38:1 upstream dilution.
- Nitrate and nitrite – There is no reasonable potential to cause or contribute to an in-stream water quality criteria exceedance as the proposed year-round discharge includes denitrification. The City requests that the effluent limitations be removed.
- Carbon tetrachloride – There is no reasonable potential to cause or contribute to an in-stream water quality criteria exceedance as the proposed year-round discharge includes ultraviolet disinfection. Carbon tetrachloride has not been detected in the WQCF influent, and can be generated by chlorination.

Table 8. Interim Effluent Limitations – The following modification is requested to the interim effluent limitation table:

- Aluminum – The interim limitation is not necessary if the secondary MCL is applied as an annual average.
- Ammonia – A performance based interim limitation should be added to the table to replace the "floating" value in Table 9 (see discussion below justifying omission of the "floating" effluent limitation). The Fact Sheet calculated maximum daily limitation (24 mg/L) is appropriate for this table.
- Nitrate and Nitrite – If the available assimilative capacity is **not** applied in the final limitations as is currently proposed in the TO, compliance with the final TO nitrate and nitrite limitations is not immediately feasible as discussed in the attached Infeasibility Analyses (Attachment B).. Table 8 should be modified to include interim effluent limitations for nitrite (4.1 mg/L) and nitrate (14.3 mg/L), based on effluent data since November 2001. If WQCF operations are modified to enhance ammonia removal (nitrification), additional nitrate and nitrite may be formed.

Table 9. Interim Effluent Limitations – Ammonia – The "floating" interim limitation in Table 9 should be omitted, and performance-based interim limitations should be added to Table 8. The interim effluent limitation in Table 9 is a "floating" value based on the observed effluent pH. This interim effluent limitation is the same as the final effluent limitations in the previous permit. Because of State Board rulings on previously petitioned permits, this "floating" effluent limitation approach is no longer considered appropriate for effluent limitations, and the Regional Board has used a WQBEL calculation methodology for the final effluent limitations in this permit. For consistency with the State Board ruling the interim effluent limitation should be achievable and based on previous performance.

COMMENTS ON SPECIAL PROVISIONS

Special Provisions C.1.c. – The TO contains a re-opener provision for Mercury that requires the Regional Board to reopen the permit after the TMDL program is adopted. However, until the TMDL program is adopted, the Regional Board cannot be certain if the permit will need to be changed to reflect requirements from the TMDL. Instead of requiring that the permit be reopened, we recommend that the first sentence be modified to read as follows: "If a TMDL program is adopted, this Order ~~shall~~ may be reopened to modify ~~and~~ the interim mass effluent limitation ~~modified~~ (higher or lower) or impose an effluent concentration limitation ~~imposed~~ if necessary to implement the provisions of the TMDL program as adopted by the Regional Board and approved by the State Water Resources Control Board, Office of Administrative Law and U.S. EPA."

Special Provision C.1. – The City requests that the TO be amended to include a specific re-opener provision for ammonia due to the installation of a diffuser, a dynamic model, a dilution study and/or the development of a water effects ratio. In either case, the current effluent limits may not be appropriate and the permit should be allowed to be re-opened to review the effluent limit for ammonia as appropriate. Calculation of the final effluent limitation should also be performed using a dynamic model; the reopener or fact sheet should provide reference to effluent limitation calculation using a dynamic model. The City requests that the following section be added:

> **"h. Ammonia Site Specific Objective and Dilution.** Without specific nitrification processes in the secondary treatment train, the City will be unable to comply with the final effluent limitations when the interim effluent limitations expire. If the discharger performs a site-specific WER study, and the results of the mixing zone provide dilution credit, a site specific objective can be used for revised final effluent limitation calculations. Additionally, the SIP allows for the use of dynamic modeling for effluent limitation calculation. This order may be reopened to modify final effluent limitations to consider this new information."

Special Provision C.1. – The Carbon Tetrachloride Low Detection Limit Study is not necessary based on data already collected by the City in the river that is reported as "not detected" below the CTR water quality criteria. These results are provided in the fact sheet comments. If the final effluent limitations are modified to consider dilution, this reopener provisions would not be necessary.

Special Provision C.3.a. – The City is not opposed to providing annual reports to the Regional Board that are intended to document the City's efforts to reduce salinity in its discharge to the San Joaquin River. However, the City does not support the inclusion of an intermediate goal based on water supply EC + 500 that automatically assumes it is achievable. The Fact Sheet contains no information or evidence that indicates that this is an achievable interim goal. The quality of source water is highly variable, especially in dry years. The City uses a mixture of low EC river water and higher EC ground water. To comply with this goal is difficult because of the widespread use of water softeners. The City requests that this portion of the study provision be removed from the TO as follows:

> **"a. Salinity Source Control Program.** The Discharger shall continue to implement the Salinity Source Control Program and update as necessary. ~~The Regional Water Board finds that an annual average salinity of the water supply EC + 500 µmhos/cm as electrical conductivity (EC) is a reasonable intermediate goal that can be achieved in this permit term.~~ The Discharger shall provide annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to the San Joaquin River ~~and to meet this goal~~. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.). The Discharger shall also participate financially in the

development of the Central Valley Salinity management Plan at a level commensurate with its contributions of Salinity to the Southern Delta."

Special Provision C.6.a. – Although the City intends to utilize tertiary treatment for the year round discharge in order to meet the effluent limits proposed for the year round discharge, the City cannot support a special provision in the TO that includes a specific manner of compliance. California Water Code section 13360 prohibits the Regional Board from mandating the manner of compliance that the City must use to meet effluent limits or other provisions within the order. Thus, provision 6 is an illegal provision and the City requests that it be removed from the TO.

Special Provisions C.7.a.ii. and C.7.b.ii. – As drafted, this compliance schedule provisions call into question the impact that this permit has on the authorization to discharge tertiary treated wastewater year round. In its present form, the provision implies that the Regional Board has not authorized a year round discharge with the adoption of this permit, which is contrary to the Regional Board and the City's intent. In order to ensure that the permit does authorize the year round discharge and clarify the type of information that the Regional Board intends to request with this provision, the City requests that provision C.7.a.ii. be amended as follows:

> "The Discharger shall ~~submit to the~~ notify the Regional Water Board's Executive Officer of its compliance with items i. above. The 2.3 mgd year round discharge shall not ~~be effective~~ commence until the Executive Officer verifies compliance with Special Provisions VI.C.7.a. ~~and approves the Discharger's request~~."

Accordingly, the City requests that provision C.7.b.ii. be amended as follows:

> "The Discharger shall ~~submit to the~~ notify the Regional Water Board's Executive Officer of its compliance with items i. above. The 4.8 mgd year round discharge shall not ~~be effective~~ commence until the Executive Officer verifies compliance with Special Provisions VI.C.7.b. ~~and approves the Discharger's request~~."

Special Provision C.7.c.iii – As drafted, pollution prevention plans are required for carbon tetrachloride, chlorodibromomethane, and dichlorobromomethane. All three of these constituents are known to be generated during the WQCF chlorination process and have not been detected in the City's influent. Pollution prevention plans are not necessary, and the requirement should be removed. Previous source control studies for the THMS performed by the City concluded that the constituents were generated at the WQCF.

Section 13263.3 of the California Water Code includes language regarding when a pollution prevention plan can be required. It states that a pollution prevention plan can be required if it is determined "that pollution prevention could assist in achieving compliance" or determined that "pollution prevention is necessary to achieve a water quality objective." (Water Code §13263.3.) The intent of this section of the Water Code is to provide a mechanism for requiring a pollution prevention plan in the situation where there is the potential for pollution prevention to assist in achieving compliance. Pollution prevention will only assist in achieving compliance when there are controllable influent sources. For these constituents, pollution prevention will not assist in achieving compliance and therefore pollution prevention plan requirements are not justified. The City requests that these three constituents be deleted from section as follows:

> "iii. **Pollution Prevention Plan.** The Discharger shall prepare and implement a pollution prevention plan for aluminum~~, carbon tetrachloride, chlorodibromomethane, and dichlorobromomethane~~ in accordance with CWC section 13263.3(d)(3)."

COMMENTS ON COMPLIANCE DETERMINATION

VII.C. Total Mercury Mass Loading Effluent Limitations – This provision would require the City to use all monitoring data including pretreatment program data to calculate total mercury mass loads to determine compliance with the proposed effluent limitation. However, not all of the City's pretreatment monitoring data is applicable to the mercury effluent limit contained in this permit, which is to protect the San Joaquin River beneficial uses. Much of the City's industrial waste is segregated to a waste line that allows for cannery wastes to be land applied. Thus, much of the pretreatment program data are irrelevant to wastewater that is not discharged to the San Joaquin River. The compliance determination language should be amended to reflect the City's unique discharge programs as follows:

> "1. The total pollutant mass load for each year (January 1st – December 31st) shall be determined using an average of all concentration data collected during the year and the corresponding total annual discharge flow. All <u>effluent river discharge</u> monitoring data collected under the monitoring and reporting program, pretreatment program, and any special studies shall be used for these calculations."

COMMENTS ON ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Item II. Monitoring Locations, Table E-1. The City requests that the monitoring location names be modified as follows so that location numbers increases sequentially from upstream to downstream:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
---	**INF-001**	**Influent to Primary Treatment Facility** 37º, 36', 37" N 121º, 00', 34" W
001	**EFF-001A**	**Effluent from Secondary Facility** 37º, 31', 20" N 121º, 05', 47" W (See Attach B, Map B-2)
001	**EFF-001B**	**Effluent from Tertiary-level Treatment Facility** 37º, 31', 20" N 121º, 05', 47" W (See Attach B, Map B-2)
---	**RSW-001** **(Previously R-1)**	**SJR Upstream at West Main Bridge** 37º, 29', 38" N 121º, 04', 50" W (See Attach B, Map B-2)
~~---~~	~~**RSW-002**~~ ~~**(Previously R-2)**~~	~~**SJR Downstream at Laird Park**~~ ~~37º, 33', 43" N 121º, 09', 08" W (See Attach B, Map B-2)~~
---	**RSW-~~003~~002**	**SJR Downstream approximately 500 feet from Discharge Point 001**
---	**RSW-~~004~~003**	**SJR Downstream approximately one mile from Discharge Point 001**
---	**RSW-004** **(Previously R-2)**	**SJR Downstream at Laird Park** 37º, 33', 43" N 121º, 09', 08" W (See Attach B, Map B-2)
---	**SPL-001**	**Municipal Water Supply**

Item V.B.1. Chronic Toxicity Testing, Monitoring Frequency – The City request that chronic toxicity testing be required quarterly as in the current permit. The WQCF has historically discharged "as-needed" and often only discharges a few days in certain months. The addition of the chronic testing to the already required weekly acute toxicity is not necessary, especially in these months of partial and intermittent discharge. The City requests that the requirement be modified as follows:

1. *Monitoring Frequency* – the Discharger shall perform ~~monthly~~ three species chronic toxicity testing quarterly, but not less than twice per year.

Item IX.A.1, Other Monitoring Requirements – The requirement states that the water supply samples should be taken at the same time as the effluent samples. This is not necessary due to the long treatment detention time. The sampling timing should be de-coupled. The City requests the following modification:

> "The Discharger shall monitor the Municipal Water Supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. (see Table E-6 regarding weighted average of multiple locations and sources). ~~Municipal water supply samples shall be collected at approximately the same time as effluent samples.~~"

Item X.D.1. Other Reports, Progress Reports, Table E-8 – The City requests that the progress reporting dates for the compliance schedules and salinity source control program be moved later in the calendar year so that data collected from the seasonal discharge season can be incorporated, and that a reasonably complete report can be prepared in the first year. The City requests that Table E-8 be modified as follows:

Table E-8. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
Compliance Schedules for Final Effluent Limitations for aluminum, ammonia, carbon tetrachloride, chlorodibromomethane, and dichlorobromomethane compliance with final effluent limitations. (section VI.C.7.c.)	**1 <u>September</u>~~June~~**, annually, until final compliance
Compliance Schedules for Final Effluent Limitations for aluminum, carbon tetrachloride, chlorodibromomethane, and dichlorobromomethane Pollution Prevention Plan (section VI.C.7.c.)	**1 <u>September</u>~~June~~**, annually, after approval of work plan until final compliance
Compliance Schedules for Final Effluent Limitations for aluminum, ammonia, carbon tetrachloride, chlorodibromomethane, and dichlorobromomethane Treatment Feasibility Study (section VI.C.7.c.)	**1 <u>September</u>~~June~~**, annually, after approval of work plan until final compliance
Salinity Source Control Program and Goal (section VI.C.3.a.)	**1 <u>September</u>~~June~~, annually**

Item X.D.3 – Sanitary sewer overflow reporting – The reporting requirement in this section is redundant with the State General WDR for collection systems under which the City is covered. The City requests that this section be removed.

COMMENTS ON ATTACHMENT F – FACT SHEET

Table F-1. Facility Information – The table should list the facility contact and authorized person to sign and submit reports as "Gary Dejesus, Deputy Director, Public Works, (209.577.6300)".

Item I.c. - The Background Information states that the Discharger submitted an Amendment requesting a year-round discharge of up to 10 mgd for tertiary treated wastewater. However, the permit includes up to 4.8 mgd; the discrepancy between the two may cause confusion, or imply that the request was denied. The City requested the 4.8 mgd discharge following meetings with Regional Board staff as noted in the November 8, 2006 letter from the City to Mr. James Marshall. The antidegradation analysis (June 2007)is also a basis for the ROWD amendment. The Background Information should be amended to reflect revised City request (see November 8, 2006 letter from the City to Jim Marshall). The following text is suggested:

"On 4 April 2006, the Discharger submitted an Amendment to the Report of Waste Discharge requesting the year-round discharge of up to 10 mgd of tertiary (or equivalent) treated wastewater from the Facility to the San Joaquin River. The application was deemed complete on 21 April 2006. Subsequent communications from the City, including a November 8, 2006 letter and the June 2007 antidegradation analysis included only a 4.8 mgd total year-round tertiary discharge."

Comments on IV. Rationale for Effluent Limitations and Discharge Specifications on Effluent Limitations (also Tables 6 through 9 in Section IV.A.)

The following comments and corrections refer to the effluent limitations in Section IV.A and the rationale for these effluent limitations in Attachment F, Section IV.

C. Water Quality-Based Effluent Limitations (WQBELs)

Item 2.b. Dilution Credits/Mixing Zone

Consistent with the City's current Permit, a Mixing Zone – Dilution & Copper Translator Study (the Study) was submitted to the Regional Board in May 2003. Following a preliminary site investigation in December 2001, ten combined monitoring events for the dilution and copper translator study were conducted between January 2002 and April 2003 where the plume was located via electrical conductivity (EC) measurements at several transects downstream of the confluence of the discharge channel and river. As the EC of the effluent and river were sufficiently different, EC acted as a "dye" without having to add any additional constituents to the discharge.

At the time the study was conducted, reeds and other vascular water plants grew within the discharge channel near the confluence with the San Joaquin River. Initial model runs performed utilizing the "bank-to-bank" measurements did not match the in-river plume measurements satisfactorily. In evaluating why the modeled plume did not reflect the measured plume, the layout of the discharge channel was reevaluated. The plants were thought to account for "dead zones" effectively reducing the channel width, as depicted in Figure 10 of the Study. As stated in the Study and reflected in the Fact Sheet, the effective channel width was determined by matching the modeled plume to the physical plume measurements. Accounting for the vascular plants in the model by reducing the channel width did accurately quantify the physical system being modeled.

Under critical low flow conditions, the flow in the discharge channel is entirely from the effluent discharge. To determine the initial conditions for the Study, only the flow discharged by the City requires consideration. Because the discharge channel was considered at the time of the study as only a conveyance system of effluent to the river, the model was set with the confluence of the discharge

channel and the river as the "discharge location". There is nothing inherent in the model that requires the simulation to start at the confluence of the discharge channel and the river.

The cumulative discharge method is a well know and accepted method[1,2,3] of representing the complex and variable natural river morphology as a simple rectangular cross section. Utilizing the method allows the CORMIX model output to be compared to the measured plume. The model matched the measured plume well. The cumulative discharge method is relatively cumbersome and is not easily prepared in a form that is immediately presentable. In any future revisions of the Study, the City will strive to include the measured and modeled plume results. The plume was measured over two discharge seasons on 10 separate events, providing a variety of flow conditions to evaluate the river edge of the discharge plume. As a discharge from a side channel, the plume will likely hug the bank. USEPA guidance states shore hugging plumes should be avoided; however, USEPA does not prohibit shore hugging plumes. Given the opportunity to obtain acute and chronic mixing credits, the City would consider a diffuser outfall, which would eliminate bank attachment of the plume.

CORMIX is an USEPA accepted model for determining mixing zones. Every application of CORMIX involves the schematization of the receiving water into the rectangular modeled system[4]. CORMIX is a valid method to evaluate the City's discharge plume in the San Joaquin River. The Fact Sheet omits a key component of the stated accuracy of the CORMIX model. The complete quote includes, "(standard deviation)". The meaning of the accuracy statement is that the modeled results should fall within ±50% of one standard deviation of the measured values[5]. The accuracy statement indicates the modeled results are expected to fall within the measured values and provide a reasonable match to the physical plume, which is reflected in the fact that CORMX is an USEPA approved model for mixing zone analyses.

Over the ten events where the City characterized the plume, there was sufficient data for the model to be effectively evaluated. Because the cumulative discharge method is required to effectively compare the model output to river measurements and at the time the Study was submitted the visualization tools were limited, the validation results were not included in the study. In the years since the study was submitted the evaluation tools have been developed to allow better representation of the model results. In the event the Study is reevaluated, the validation results will be processed for inclusion in an updated submittal.

The discharge channel was not considered in the Study as part of the discharge plume, only a conveyance to the river. Also, the natural growth of vascular plants may effect the initial mixing at the confluence of the treated effluent and San Joaquin River. In light of these two points, the City would consider a diffuser outfall in the river channel as outlined in the Study to achieve acute and chronic

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[1] Doneker, R.L. and G.H. Jirka, (2002), "Boundary Schematization in Regulatory Mixing Zone Analysis", *J. Water Resources Planning and Manag., ASCE,* V 128, n 1, pp. 46-56.

[2] List, E.J., H.B. Fischer (1979), Mixing in Inland and Coastal Waters, Academic Press, October, 1979.

[3] Yotsukura, N., and W.W. Sayre (1976), "Transverse Mixing in Natural Channels", *Water Resources Research*, V 12, n 4, pp.695 – 704.

[4] U.S. EPA (USEPA 1996), User's Manual for CORMIX: A Hydrodynamic mixing zone model and decision support system for pollutant discharges into surface waters, CX824847-01-0, September 1996.

[5] Letter from Dr. Robert Doneker of MixZon, Inc. to Robert Seyfried of Sacramento Regional County Sanitation District.

mixing credits. Without the possibility of dilution credits for aquatic life, the diffuser would serve no purpose and would not be considered by the City.

Item 2.c. Hardness
In reference to the concave upward criteria, the Fact Sheet (F-25, Equation 2) correctly states the highest or lowest receiving water hardness, whichever leads to the development of more restrictive water quality criteria is the appropriate H_{rw}. However, in the following paragraph it is stated that either the minimum recorded effluent hardness or a maximum allowable receiving water hardness of 400 mg/L as $CaCO_3$ would be selected for use in Equation 2. As stated in Equation 2, the minimum or maximum recorded hardness should be evaluated and the most restrictive criteria of the two should be selected for effluent limitation calculation. Furthermore, the whole discussion involving the criteria shape being concave up or down is based on providing the intended level of protection to aquatic life in all mixes of effluent and receiving water from whole effluent to an infinite dilution with the receiving water. What is the basis for determining that the effluent will raise the hardness in the receiving water but not the alkalinity? In addition, changes to hardness without changes in alkalinity and/or pH may have no difference in aquatic life response than changes to hardness with alkalinity and/or pH. The guidelines for toxicity testing allow relatively variable composition of "lab water" including utilizing "Perrier water". There does not seem to be evidence included in the Fact Sheet to necessitate the use of lowest upstream hardness in place of Equation 2.

Item 3.e., Aluminum – The TO included final effluent limitations for aluminum based on *National Recommended Water Quality Criteria for Aluminum - 2002*[6] as it has in other similar permits in the Central Valley (see NPDES permits for the Cities of Davis and Yuba City). As part of the November 2005 ROWD, the City submitted a preliminary report on aluminum water effects ratio (WER) study results. As you know, the WER is used to adjust national ambient water quality criteria that are based on toxicity tests in "laboratory water" to account for site specific water quality conditions.

The revised preliminary results for *Ceriodaphnia dubia* are compared in . Note that the City of Modesto's site samples were spiked with aluminum up to 32,000 µg/L with generally no toxic effects directly related to aluminum. Following the Modesto study, it was determined that spikes up to 8,000 µg/L would provide large enough WER's, yet avoid potential test condition problems related to precipitation of aluminum and pH control. At the high dosing rate in the City of Modesto study, toxicity effects related to aluminum became difficult to distinguish from other effects related to pH control or solids precipitation.

Table 1. Comparison of Preliminary Aluminum WER Study Results (*Ceriodaphnia dubia*)

Study	**Total Aluminum EC_{50} (µg/L)**
Manteca	>9,450
Modesto	>11,900
Yuba	>8,000
Median	>9,450
Study	**WER using Median Manteca Laboratory Water EC_{50} (413 µg/L)**
Manteca	22.9
Modesto	28.8
Yuba	19.4
Median	22.9

[6] USEPA 2002. *National Recommended Water Quality Criteria: 2002.* Office of Water, Office of Science and Technology. EPA-822-R-02-047. November 2002.

An outstanding question is whether preliminary WER results provide a reasonable indication of the results of a complete WER study. A complete WER study includes at least three study events and a range of (flow) conditions and laboratory water dilutions (spikes) for each event and species. As shown in Table 2, although the Manteca WER results varied only slightly, the median value is consistent with the preliminary study values and sufficient to adjust the USEPA water quality criteria significantly higher than other available water quality criteria.

Table 2. Ceriodaphnia dubia Acute Toxicity Results for City of Manteca Aluminum WER Study

Event	Lab Water Aluminum EC50 (µg/L)	Simulated Downstream Aluminum EC50 (µg/L)	WER
No. 1	313.5	>9,450	30.1
No. 2	448	>10,000	22.3
No. 3	378	>9,600	25.4
No. 4	779	>15,100	19.4
Median	413	>9,800	23.85

Based on the WER from these three Central Valley studies, the USEPA aquatic life criteria does not appear scientifically defensible on a site-specific basis. The WER-adjusted water quality criteria is significantly greater than the maximum observed effluent concentration. Although the TO includes a reopener to consider a WER for aluminum, the additional effort does not seem necessary given the weight-of-evidence. The City requests that the effluent limitation calculations be revised to consider the WER studies conducted by the City and others. The Secondary MCL of 200 µg/L would then be applied in the same manner as the iron and manganese Secondary MCL's (i.e., annual average).

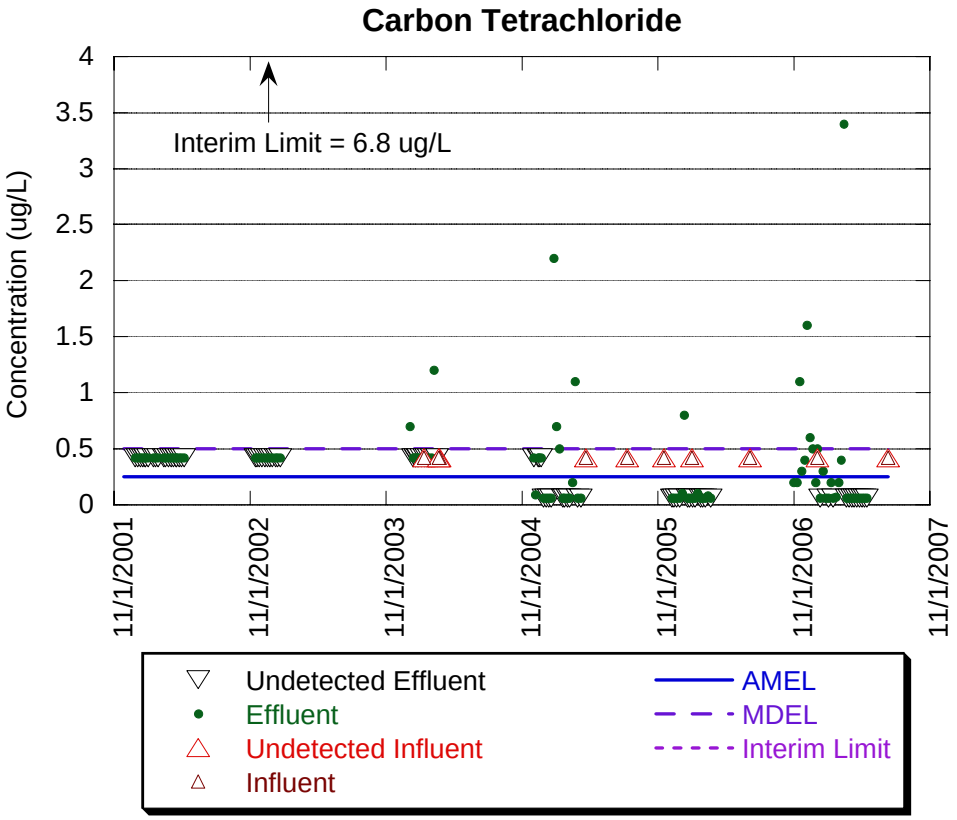
Item 3.e., Ammonia –The final daily maximum effluent limitations for ammonia are calculated based on worst case conditions (maximum effluent pH of 8.5) rather than the $1/10^{th}$ percentile downstream river pH used in other recent Central Valley river-discharging permits (e.g., Atwater, Lodi). Use of the maximum allowable effluent pH is highly conservative because the WQCF effluent pH rarely exceeds 8.0. The City requests that a specific reopener be included to allow for an ammonia WER, dynamic modeling, and dilution modeling (see previous comments in Special Provisions section).

Item 3.i., Carbon Tetrachloride – The City acknowledges that there is reasonable potential for occasional exceedances of the carbon tetrachloride water quality criteria in the *secondary* discharge (i.e., MEC exceeds 0.25 µg/L), however, there is no reasonable potential or basis for including final limitations for carbon tetrachloride in the planned tertiary discharge, which includes UV disinfection. The likely occasional source of carbon tetrachloride in the secondary discharge is the existing chlorine-based disinfection system.

The order requires the City to prepare a pollution prevention plan, however, the source of carbon tetrachloride are known to be related to chlorination processes at the WQCF. The City requests that this requirement be removed.

The figure below comparing influent and effluent concentrations of carbon tetrachloride (CCl_4) at the WQCF indicates that there are detected levels of CCl_4 in the effluent, but no detected levels of CCl_4 in the influent. These data suggest that there are no influent sources of CCl_4 that discharge to the WQCF and that the source of CCl_4 in the effluent is the chlorination process within the WWTP. The scientific

literature indicates that CCl_4 can be formed as chlorine disinfection byproduct[7]. Another potential source of CCl_4 in the WQCF is contamination from CCl_4 used in the chlorine cylinder cleaning process[8].



Considering that CCl_4 is well recognized as a chlorination byproduct and that the WQCF has no apparent influent sources of CCl_4, it is reasonable to conclude that use of UV disinfection in place of chlorine disinfection for tertiary effluent should eliminate the formation of CCl_4 within the tertiary treatment element of the WQCF. Thus, CCl_4 should be considered in the same manner as THMs with respect to WQBELs. Consequently, the City requests that WQBELs for CCl_4 be removed for tertiary effluent.

The secondary, seasonal effluent limitation should be recalculated to consider dilution. Ambient data collected since the ROWD are below a method detection limit that is less than the CTR water quality criteria (0.25 µg/L). These data are reported in the table below.

[7] Tata, P., Witherspoon, j, and Lue-Hing, C, 2003, VOC emission for Wastewater Treatment Plants, CRC Press, 2003.

[8] EPA, 2002, Occurrence of Disinfection By-products of Health Concern in Drinking Water: Results of a Nationwide DBP Occurrence Study, EPA/600/R-02/068, September 2002.

Carbon Tetrachloride in Upstream Ambient Sampling (Site 4-340, all units "µg/L")

Sample Collection Time	Result	Reporting Limit	Method Detection Limit
11/22/05 11:00	ND	0.5	0.06
12/13/05 11:15	ND	0.5	0.06
12/21/05 11:15	ND	0.5	0.06
1/4/06 12:20	ND	0.5	0.06
2/8/06 13:45	ND	0.5	0.06
2/23/06 10:00	ND	0.5	0.06
3/8/06 10:30	ND	0.5	0.06
3/22/06 14:15	ND	0.5	0.06
11/30/06 11:30	ND	0.5	0.04
12/14/06 12:00	ND	0.5	0.04
1/10/07 11:00	ND	0.5	0.04
3/29/07 11:35	ND	0.5	0.04

3.j., Chloride – The basis for the TO chloride final effluent limitation is the USEPA National Recommended Ambient Water Quality Criteria for the protection of freshwater aquatic life (1988). However, chloride is a primary component of salinity. The recently adopted Lower San Joaquin River Salinity and Boron TMDL includes the City's NPDES point source discharge with a concentration-based waste load allocation (WLA). The sources of chloride in WQCF influent and effluent are the same as will be investigated as part of compliance with the Salinity and Boron TMDL. The narrative-based Basin Plan toxicity incorporation of the USEPA aquatic life objective is less stringent than the agricultural-based TMDL WLA. Application of the aquatic life water quality objective is then unnecessary as current chloride loading from the discharge is essentially capped with use of the interim limitation for electrical conductivity (the TMDL selected salinity indicator). Consequently, the City requests that the WQBELs for chloride be removed for tertiary and secondary effluent. The correct AMEL calculation in Table F-5 (216 mg/L) is not consistent with the Fact Sheet Tables 6 and 7 average monthly effluent limitation (262 mg/L).

Item 3.l., Copper – Although the WQCF no longer has reasonable potential for exceedance of copper CTR water quality criterion, the translator study was updated 6/19/07 to include twenty total events and the City's study report recommended a chronic translator between of 0.5 and 0.52. For future reference, the Fact Sheet should acknowledge the submittal of the supplemental study report and summarize the resulting available translator for possible future use. The following addition are suggested for the first paragraph of this section:

> **"**The study report was updated in June 2007 to consider twenty sampling events. Based on EPA and SIP guidance, that report recommends a chronic translator of 0.5 and an acute translator of 0.70. "

Item 3.m., Chlorodibromomethane – The order requires the City to prepare a pollution prevention plan, however, the source of chlorodibromomethane are known to be related to chlorination processes at the WQCF. The City requests that this requirement be removed. See the discussion regarding Special Provision C.7.c.iii.

Item 3.n., Dichlorobromomethane – The order requires the City to prepare a pollution prevention plan, however, the source of dichlorobromomethane are known to be related to chlorination processes at the WQCF. The City requests that this requirement be removed. See the discussion regarding Special Provision C.7.c.iii.

Item 3.p., **Iron** – The finding of reasonable potential and subsequent effluent limitation calculations are based on the drinking water Secondary MCL (300 µg/L) *applied as a total recoverable concentration.* This water quality criteria is incorporated into the Basin Plan for receiving waters with existing or potential municipal drinking water beneficial uses (MUN). However, the Department of Health Services regulates drinking water supplies using the *filtered* fraction and has recently[9] confirmed that such a practice for wastewater discharge compliance would be protective of drinking water supplies. The City appreciates the Regional Boards use of compliance based on an annual average, and requests that compliance be permitted using filtered samples.

Table F-10 footnote "8" and Table F-11 footnote "10" refers to the iron averaging period as "Daily Average". This should be "Annual Average" based on section IV.A.1 (item g) and IV.A.2 (item g).

Item 3.q., Manganese -- The finding of reasonable potential and subsequent effluent limitation calculations are based on the drinking water Secondary MCL (50 µg/L) *applied as a total recoverable concentration.* This water quality criteria is incorporated into the Basin Plan for receiving waters with existing or potential municipal drinking water beneficial uses (MUN). However, the Department of Health Services regulates drinking water supplies using the *filtered* fraction and has recently[4] confirmed that such a practice for wastewater discharge compliance would be protective of drinking water supplies. The City appreciates the Regional Boards use of compliance based on an annual average, and requests that compliance be permitted using filtered samples.

Table F-10 footnote "8" and Table F-11 footnote "10" refer to the manganese averaging period as "Daily Average", this should be "Annual Average" based on section IV.A.1 (item h) and IV.A.2 (item h).

Item 3.s., Molybdenum – The City appreciates the Regional Board's consideration of assimilative capacity in the San Joaquin River, however, the use of performance based final effluent limitations is not consistent with the SIP. The Regional Board WQBEL calculation for the secondary discharge (AMEL = 52 µg/L and MDEL = 81 µg/L) and tertiary discharge (AMEL = 90 µg/L and MDEL = 142 µg/L) uses dilution credits of 20:1 and 38:1, respectively. The TO then determines:

> "However, the Regional Water Board finds that granting of these dilution credits could allocate an unnecessarily large portion of the receiving water's assimilative capacity for molybdenum and could violate the Antidegradation Policy."

This conclusion conflicts with the WQBEL methodology in the SIP. The molybdenum water quality criteria is based on an agricultural goal for foraging livestock, but includes an acute (15 µg/L) and chronic (10 µg/L) goal for the reach of the San Joaquin River from the Merced River to Vernalis. The City requests that the WQBEL-based calculation be used to consider dilution as this methodology is intended to be protective; arbitrary allocation of available assimilative capacity as was done in the TO may not be in the best interests of the people of the State.

The effluent limitations in the Fact Sheet, Tables F-10 and F-11 have the incorrect values and should match the values in Tables 6 and 7.

Item 3.t., Nitrate and Nitrite – The lowest applicable water quality criterion for nitrate and nitrite are based on the primary MCLs for drinking water supply. These water quality criteria are used directly as

[9] Letter from Carl Lischeske, P.E., Chief, Northern California Region, Department of Health Services to Kenneth Landau, Assistant Executive Offices, Central Valley Regional Water Quality Control Board regarding "Yuba City Wastewater Treatment Plan". April 10, 2007.

effluent limitations for both the secondary seasonal and year-round tertiary discharges. Information is not presented in the effluent limitation tables or fact sheets with regard to the effluent limitation calculation per SIP WQBEL process. Moreover, the upstream concentration indicates that assimilative capacity is available, however, no dilution is provided. The City requests that clarification be provided on the effluent limitation calculation methodology, and that the calculation include available dilution.

With regard to the planned year-round tertiary discharge, the City will include nitrification and denitrification designed for compliance with water quality criteria. Thus, there can be no finding of reasonable potential to cause or contribute to exceedances in the San Joaquin River. The City requests that the year-round tertiary effluent limits be removed from the permit.

Item 3.u., Organophosphorus Pesticides – The Fact Sheet discusses issues related to analytical methods and specifies EPA 8141A as an available method to comply with monitoring requirements, however, Table E-3 (page E-4) requires the City to use "Method 625M, or later". For consistency, the City recommends modifying the fact sheet to include reference to "EPA Method 8141, EPA Method 625M or equivalent GC/MS method" and to add a footnote to Tale E-3 which allows any analytical method with minimum levels equal to or less than the water quality criteria.

Item 3.v., Salinity – The City does not support the inclusion of an intermediate salinity goal based on water supply EC + 500 that automatically assumes it is achievable. The Fact Sheet contains no information or evidence that indicates that this is an achievable interim goal. The quality of source water is highly variable, especially in dry years. The City uses a mixture of low EC river water and higher EC ground water. To comply with this goal is difficult because of the widespread use of water softeners. Thus, the City suggests the following edits to the last sentence of this section:

> This Order contains interim performance based effluent limitations for EC~~, and an EC goal based on the weighted average of the Discharger's water supply plus an increment of 500 µS/cm~~.